Dru 38

THE IRON AGE.

32
2416
Part 15

VOL. LXXVI.

JULY—DECEMBER, 1905.

NEW YORK
DAVID WILLIAMS COMPANY
14-16 Park Place

INDEX.

Illustrated articles indicated by *.

A.

Abrasive materials, Production of, in 1904, 276
Accounting:
  Modern commercial and industrial practice, 773, 841, 918b, 987, 1056
  System for mining supplies. By W. M. Jeffery, 1086
Acetylene:
  Use of dissolved, 1543
  Use of, for self-welding, 1561
Acetylene blow pipe for welding, 532
Acid pickle for iron and steel, 801
Acme Harvester Co., 473
Acme thread rolling machine, *1666
Adams, C. C., Sketch of, *1124
Aerostation. By S. D. V. Burr, 1172
Afro-American Trading & Navigation Co., 1206
Air compressor, Wellman-Seaver-Morgan, *147
Air compressor installation in shops at Omaha, Neb., 1772
Air moistener, Geetzy, *1727
Ajax Mfg. Co., 864
Alcohol:
  Free, for industrial use, 183
  Manufacture of denaturized, 546
Algoma Steel Co., work of charcoal furnace, 663
Allegheny Steel Co., 45
Allis-Chalmers Co., 10, 1366
  Annual report, 612
  Steam turbine, 1366, *1601
Allis-Chalmers-Bullock pattern building, *1302
Altenberg, G. P. How Germans sell machinery in foreign countries, 1307
Aluminum production in 1904, 941
Amalgamated scale, Signers of, 80
American Association of Masters and Pilots of Steam Vessels, 401
American Blower Co., 1156
American Boiler Manufacturers' Association, 242, 290
American Car & Foundry Co., Report, 5
American Ferrofix Brazing Co., 677
American Foundrymen's League, 337
American Gas Light Association, 1097
American Hardware Manufacturers' Association, 1122, 1198, 1265, 1335
American Locomotive Co., Report, 676
American Mfg. Co., 1084
American Sheet & Tin Plate Co.'s mills, 756
American Shipbuilding Co., Report, 954, 1096
American Smelting & Refining Co., 684
American Society of Mechanical Engineers, 1291, 1545, 1607
American Society for Testing Materials, Atlantic City meeting, 13
American Steel Foundries, 346, 905
American Street Railway Association, 823, 887
American Tool Co., 575, 1004
Andris-Jochams. Chain making by electric welding, *81
Annealing malleable castings without pots, 1165
Anthracite strike, Threat of another, 680
Anti-Tip Act of New York, 607
Antimony production in 1904, 604
Apprentices:
  Education of, 1386
  Modern system, 1092
Arizona copper interests of iron men, 79
Arkansas creed, Norvell's, 188
Arkansas Retail Hardware Association, 56
Armor plate, Midvale, accepted, 275
Armor plate plant for the French Admiralty, 1154
Armor plate sawing, *465
Army Ordnance Report, 1680
Ash and garbage cans, *1651
Asheville Hardware Co.'s inventory method, 1419
Ashland slag cement plant, *141
Associations, Duty of the minority, 1460
Atkinson, B. F., Sketch of, 979
Atlanta Rolling Mill & Tin Plate Co., 477
Austin, O. P. Opportunities for increased foreign trade, 1425
Australian notes, 124, 841, 1417
Autarith, a calculating machine, *1448
Automatic Machine Co., 1005
Automobile dust nuisance, 954
Automobile industry, 22
Automobile turntable, *283
Automobiles:
  American and foreign automobiles. By S. D. V. Burr, 1094
  Couple gear electric truck, *335
  Halsey steam truck, *671
  Racing a menace to the automobile, 482
Automobiles and machine shops, 1689
Avera, W. T. Special brands, 56

B.

Backus suction gas producer, *469
Baker, J. H. Car wheel forging, *596
Balancing machine, Seymour rotary, *1679
Baldwin Forging & Tool Co., 192, 322
Ball & Norton belt type magnetic separator, *1367
Baltimore restoration, 483
Bankruptcy law, Federal, 1600
Bankrupts, Fraudulent, punished, 1755
Baraboo iron ore range, 47
Bard & Cheney circulars, *1569
Barker, L. H. Paper as protection for iron and steel, *148
Barnes drill, *945
Barnes keyseating machine, *1675
Barrett Hardware Co. and its work, 648
Beam rolls, Designing, *408
Becker-Brainard Milling Machine Co., 1458
Belt factory of Schieren & Co., *601
Belt tighteners for machine shop tools. By S. D. V. Burr, 1447
Belting, Rubber, and the machine for making it, *278
Bertrand-Thiel process. By E. von Maltitz, 349
Bian furnace gas washer, *669
Bickford Drill & Tool Co., 1296, 1366
Bigelow, S. A.:
  Address by, 1267
  Fiftieth anniversary, *1059
Billing & Spencer Co., Cost system of, 1202, 1274, 1494
Birge, J. C., Portrait of and address by, *1338, 1341
Birmingham District, Steel making in, 887
Bit extension, Mayhew, *62
Blacknell, F. S. Evolution of the stove business, 56
Blast furnace capacity, 1393
  Expansion in, 1461
Blast furnace flue dust, A method of utilizing, 436
Blast furnace gas:
  As reducing agent for open hearth ore, *1678
  Electric power from. By H. Freyn, 1768
  Utilization of. By Victor Defays, 1293
Blast furnace gas washer, *669
Blast furnaces:
  Action of gas on the furnace lining, 735
  British and American outputs, 616, 1024
  Dry air for. Papers presented at the Liege Congress, 1292
  Electric power from. By P. Eyermann, 150
  Experiments with the Forsetter process, 683
Blast furnaces:
  Failure of inwalls. By H. B. Weaver, 416
  Higher fuel consumption at, 1689
  Moisture and furnace results, 404
  Operating a charcoal furnace on 100 per cent. concentrates. By H. R. Hall, 531.
  Record breaking operation, 1304
  Statistics, 1615
Blast pressures in the cupola, High and low. By W. H. Coleman, 1451
Bliss, E. W., Co., 284, 947, 1375, 1760
Bliss-Leavitt torpedo, *1594
Blount, J. G., Co., 877, 1295
Blowing engine, Tod long cross, *1139
Bogardus, W. P. Parcels post, 449
Boiler, Wigert, *1083
Boiler horse-power to kilowatts. By A. E. Dixon, 416
Boiler plates, Fractures in large steel. By J. T. Wilton, 477
Boiler regulations, Amendments to, 218
Boiler tube cleaner, Gronvold, *735
Bolt threader, National motor driven, *276
Bolts:
  O. K. expansion, *1061
  Rolled thread, 377
  Staybolts, Solid, flexible and hollow, 1016
Bon Air Coal & Iron Co., 534
Bonnett tire inflator, *880
Book reviews:
  Annual for the Metallurgy of Iron, 638
  Automobile Pocket Book. By E. W. Roberts, 303
  Cements, Limes and Plasters. By E. C. Eckel, 638
  Coke. By John Fulton, 567
  Colliery Managers' Handbook. By Caleb Pamely, 638
  Competent Life, The. By S. D. West, 1457
  Copper Handbook, 433
  Crystallization of Iron and Steel. By J. W. Mellor, 831
  Der Steinkohlen Bergban in der Umgebung von Saarbruecken, 120
  Electric Smelting and Refining. By W. Borchers, 303
  Electrician's Handy Book. By T. O'C. Sloane, 433
  Geology of Western Ore Deposits. By Arthur Lokes, 567
  Government Regulation of Railway Rates. By H. R. Meyer, 1310
  Honorable Peter White. By R. D. Williams, 433
  Jahrbuch der Automobile und Motorboat Industrie. By Ernst Neuberg, 120
  Manual of Mining. By M. C. Ihlseng and E. B. Wilson, 638
  Modern Gas Engines and Producer Gas Plants. By R. E. Mathot,, 567
  Modern Industrial Progress. By C. H. Cochrane, 47
  On the Location and Examination of Magnetic Ore Deposits by Magnetic Metric Measurements. By Eugene Haanel, 703
  Patents, 120
  Pocketbook of Refrigeration, 120
  Practical Blower Kinks. By Carroll Ashley, 974
  Properties of Steel Sections. By J. C. Samples, 638
  Railway Provident Institutions in English Speaking Countries. By M. Riebenack, 703
  Steam Pipes. By W. H. Booth, 120
  Temperature-Entropy Diagram. By C. W. Berry, 120
Boring bar, Underwood portable, *1763
Boring machines:
  Bullard, *1442
  Espen-Lucas portable, *858

Boring machines:
Ridgway horizontal, *4
Boring mill manufacturers meet, 1681
Bosh cooling device, *1615
Bostrom-Brady Mfg. Co., 675
Brakes, Watres automobile, *1084
Brass furnace tests, Steele-Harvey. By W. T. Krause, 737
Brass Manufacturers' Association, 1719
Brass mill, Chemist in the, 886
Brazil, American trade in, 917
Bread mixer, Eclipse, *62
Bridges:
Erection of trunnion bascule bridge at Chicago, *340
Manhattan, Specifications, *222
New York's bridge problem. Report of G. E. Best, 664
Rolling lift bridges and multiple tracks, 832
Victoria Falls, 77
Briggs, O. P., Address by, 1382
Broderick & Bascom Rope Co., at the Portland Fair, 421
Brooks centrifugal pump, *402
Brown-Corliss Co., 1375
Buck, Charles, *6451
Bucket, Faivrette clam shell, *345
Buel, Hambden. Pig iron grading by analysis, 154
Buell, J. L. The Menominee range, 1519
Buffalo Forge Co., 8, 341, 674, 1008
Buffalo Foundrymen's Association, 798, 1156
Buggy washer, *456
Bullard Machine Tool Co., 1442
Bureau of Standards, Work accomplished by, 1289
Bureau of Steam Engineering, 1236
Burners, Twentieth Century gas, *60
Burr, S. D. V.:
Aerostation, 1172
American and foreign automobiles, 1094
Belt tighteners for machine shop tools, 1447
Electrification of the Long Island R. R., *1141
Invisible platinum wire, 1019
New Bliss-Leavitt torpedo, *1594
Burt Mfg. Co., 872
Bush, E. M., Portrait, *1341
Business methods:
Accounting practice. By H. Foster, 773, 841, 918b, 987, 1056
Accounting system for mining supplies. By W. M. Jeffery, 1086
Buying of hardware jobbers and manufacturers, 57
Clerks, Raising standard of efficiency of 258
Conduct of the hardware business, 1724
Co-operation, not competition, 744
Cost system of Billings & Spencer Co., 1202, 1274, 1494
Country trade, Best methods of reaching, 58
Credit man and his work, 987
Cultivating farmers' trade, 712
Hints to hardware merchants, 454, 572, 649, 710
Inventory methods, 1273, 1419, 1496, 1576, 1577, 1643
Keeping track of stock, 1569
Local hustling. By H. A. Johnson, 1122
Manufacturing methods. By C. L. Goodrich, 1080
Payroll form, 1128
Pointers for hardwaremen, 55
Prices, Restricted, 126, 191, 253, 385
Prices, Who is to blame for unprofitable? 256
Reminder for buyers of season goods, 1421
Season goods, List of, 1198
Selling goods a profession. By F. B. Ellsworth, 1793
Selling machinery for securities, 483
Stock taking, 56
"Unfair commercial attacks are boomerangs," 743
Business situation:
Illustrations of prosperity, 1766
Outlook, 354
Business situation:
Overestimated net profits of good times, 884
Waiting for the low point, 96
Butler Brothers, 1724

C.

Calculating machine called the autarith, *1448
Caliper, S. & S. vernier, *918g
Can seamer, Niagara, *472
Canada:
Billets exempt from Canadian dumping duty, 487
Census of manufacturers, 1152
Industrial affairs, 209, 598, 746, 1018, 1145
Iron and steel development, 884, 1464, 1606
Moose Mountain ore properties, 1150
Rail bounty, 412, 592
Tariff problem, 88, 370, 870, 1308
Tin plate manufacture, 952
Water power development, 881
Canadian manufacturers visit Great Britain, 221
Canadian plants of American manufacturers, 384
Canadian Shovel & Tool Co., 53
Canals:
New York barge canal, 673
Ohio River-Lake Erie, Proposed, 950 1240
Car building in 1905, 1740
Car loading machine for loading coal in mines, *1230
Car manufacturers' consolidation, 287
Car mover, Samson, *1503
Car orders, Record breaking, 1100
Car wheel forging. By J. H. Baker, *596
Car wheels:
Cast iron, 19
Specifications for cast iron, 162
Gasoline motor car, Union Pacific R. R., *269
Gasoline motor work car, *605
Steel cars in collision, *1232
Carburettor, Turner, *948
Cargo sampling of iron ores at Lake Erie ports. By W. J. Rattle & Son, 1162
Carnegie Steel Co.'s Works, South Sharon, Pa., 1171
Carnegie Technical Schools, 24
Carpenter's trade and the hardware man, 454
Carpet sweeper, Sterling, *519
Cartridge cases, Manufacture of. By Leandro Cabillo and A. P. Head, *1746
Case hardening of steel. By David Flather, 310
Casting pipe in a rotary mold. By C. B. Straus, *599
Castings, Steel, Preparation of molds for. By Arthur Simonson, 1044
Catalogue House Committee, 707, 1646
Catalogue house competition:
Dealers largely responsible for conditions, 989
Discussion, 511
Hardship of the retailer, 576
How to meet competition, 255
Jobbers' special brands and catalogue houses, 1416, 1571
Local R. R. agents, 650
Manufacturers and retailers on the question, 1126, 1571
Rural free delivery and the catalogue houses, 249, 772, 844, 916, 983, 1053, 1121, 1334
South Dakota scheme to fight catalogue houses, 1796
"Too much said," 1639
Traveling salesmen on the question, 777
Treatment of the problem. By W. W. Webber, 59; W. M. Pratt, 1346; E. M. Bush, 1348; S. R. Miles, 1349
Winning trade from catalogue houses, 1415
Catalogues, Standard sizes for, 1199
Cement plant, Slag, Ashland, *141
Central American notes, 272, 496, 867, 1303, 1406, 1775
Central Foundry Co., Annual report, 536
Chain hoist, Cyclone high speed, *219
Chain making by electric welding. By Andris-Jochams, *81; By W. S. Gorton, 227, 290
Charcoal, Manufacture and properties of. By S. H. Stupakoff, 542
Charcoal and coke iron comparison, 1238
Charcoal iron industry, 544
Chemist in the brass mill, 886
Cherry, Joseph H., on larger markets for American manufacturers, 1571
Chicago electrical show, 1375
Chicago Hardware Association, 254
Chicago Pneumatic Tool Co., 756, 1373
Chicago track elevation, 872
Chicago tunnels and settling buildings, 615.
China:
Boycott of American hardware, 320
Railroad development. By John Foord, 1376
Christmas advertising. By H. A. Johnson, *1641
Chuck, Grönkvist drill, *807
Cincinnati Metal Trades Association, 44, 904, 1743
Cincinnati Shaper Co., 663
Cinder tap, Lürmann, 1094, 1168, 1766
Citizens' Industrial Association of America, 1393
Clamp, Neverbreak, *62
Clerks, Raising standard of efficiency of, 258
Cleveland Armature Works, 1759
Cleveland pig iron, British speculation in, 738
Clothesline fastener, Sure Grip, *653
Clutch, Smith friction and positive, *1686
Clutch reversing gear, English coil. By S. D. V. Burr, *1598
Coal:
Bituminous coal market. By F. E. Saward, 953
Consumers should buy. By F. E. Saward, 764
Consumption in New York City, 1611
Loading machine in mines, *1230
Soft coal, Use of, in New York City. By F. E. Saward, 1003
Coal dryer plant of special design, *591
Coal handling apparatus, Simonds Mfg. Co., *73
Coal situation as regards labor. By F. E. Saward, 1534
Coal trade. By F. E. Saward, 1463
Coal washer, Pittsburgh, *1234
Coffee mill, Monitor, *846
Coffee pot, Meteor circulating, *324
Coke:
By-product, in the blast furnace, 1692
By-product, in the Northwest, 1167
Charcoal and coke iron comparison, 1238.
Production in 1904, 344
Coke and ore prices for 1906, 1166
Coke contracts, Laxity in, 1093
Coke drawing machine for beehive ovens. By G. T. Wickes, *338
Coke oven, Rothberg by-product, *855
Coldwell, Thomas, Biographical sketch of, *3199
Coleman, W. H. High and low blast pressures in the cupola, 1451
Colorado Fuel & Iron Co., 157, 1038
Compressor plant, Electric, of Chicago & Northwestern Terminal Ry., *78
Concrete conveyor, Baker, *845
Concrete work at Niagara Falls, 1299
Condensers, Jet, A two-unit installation of, *282
Connecticut Hardware Association, 194
Conservatism, Incitements to, 1092
Consular service of the U. S., 1309
Continental Co., Detroit, Mich, 1271
Contracts are not meaningless documents, 1537
Cookson steam trap, *1674
Co-operation, not competition, 744
Co-operative education. By Herman Schneider, 1744
Copper, Our dominating position in, 288
Copper mining notes, Michigan, 1673
Copper prices and the brass foundries, 951

Couplers, O. K., *1730
Crane Company:
History, 280
Jubilee, 75
Cranes:
German electric cranes, *868
Pawling & Harnischfeger walking jib crane, *666
Crank shaft machine, Espen-Lucas, *1148
Credit man and his work, 987
Crop reports, Importance of, 165, 415
Crop statistics for 1905, 1761
Crucible Steel Co. of America, Report of, 936, 1097
Cubillo, Leandro, and A. P. Head. The manufacture of cartridge cases, *1746
Cupola:
High and low blast pressures in. By W. H. Coleman, 1451
Keep sectional, *532
Currency expansion and commodity values, 1288
Cutlery, Foreign markets for American, 986
Cutting-off machines:
Eberhardt spur and bevel gear, *1365.
Fawcus double axle cutting off and centering machine, *518
Railway Appliances Co., with Taylor-Newbold saw, *729
Cylinder diameters for blowing engines, Chart showing ratio of, 1236
Cylinder heads, Never Break All Steel, *1428
Cylinders, Large steel, Dutiable classification, 877

D.

Dallett portable drills, *1287
Dam, Removing diverting, of Ontario Power Co., 219
David Wigert Boiler Works, 1083
Davis Mfg. Co., 594, 733
Decimal equivalents, 839
Defiance automatic wood threading machine, *84
Desulphurization, Experimental. By R. Meeks, 1227; J. Hartshorne, 1305
Diescher shaft coupling, *159
Dish washing machine, Cyclone, *1500
Dixon, A. E.:
Boiler horse-power to kilowatts, 416
Financial end of industrial engineering, 878
Notes on draft, 678
Dog, Whitcomb-Blaisdell planer shipping, *1459
Dominion Iron & Steel Co., Report, 973
Door catch, American, *323
Door hinge, Bommer, *652
Door stop, Champion, *581
Douglas, A. W., The system of restricted selling prices, 126
Draft, Notes on. By E. A. Dixon, 678
Draper Machine Tool Co., 1, 731
Drawback:
Circular saws and oil drums, 949
Corundum wheels, 863
Locomotives, 677, 728
(See also Tariff.)
Drawback law, Amendment of, 1616
Dreses universal monitor lathe, *337, *1535
Drill, Diamond, Work done by, in ore prospecting, 637
Drill and grinder, Gem electric portable, *733
Drill chuck, Grönkvist, *807
Drilling machines:
Barnes sliding head gang, *945
Bickford mud ring drill, *1366
Bickford three-foot radial, *1296
Dallett portable drills, *1287
Gardam multiple spindle, *865
Niles new radial drill, *1363
Niles 6-foot radial, *207
Driver-Harris Wire Co., 757
Drop hammer, Billings & Spencer, 477
Drop lifter, Peck automatic, *946
Dudley, C. B. The testing engineer, 25
Duluth electrification projects, 798
Dynamometer tests of water wheels, *1452

E.

Eastern Pig Iron Association on Lake Champlain, 862
Eberhardt Brothers Machine Co., 1365
Eckel, E. C. The iron industry of Texas, present and prospective, 478
Education, Co-operative, by Herman Schneider, 1744
Electric furnace in steel making, 470
Electric motor, Commercial induction, *471
Electric light and power stations, Census report on, 825
Electric power from blast furnace gas. By H. Freyn, 1768
Electric power from blast furnaces. By P. Eyermann, 150
Electric power plants Boston & Worcester St. Ry., *527
Electric smelting of iron ore, 1742
Electric truck, Couple gear, *335
Elevator bucket, Link-Belt, *476
Elevator plant of Trinity Building tested, 1609
Ellsworth, F. B.:
Manufacturers and jobbers, 1416
Selling goods a profession, 1793
Emery-Waterhouse Co., Inventory system, 1576
Engineer, The testing. By C. B. Dudley, 24
Engineering, Is it overcrowded? 1164, 1166
Engineering building, New York, *1589, 1767
Engineering schools and the unions, 951
Engine stop, Locke automatic, *1079
Engines:
Hamilton high speed Corliss, *1526
Lidgerwood erecting engine, *1745
Mesta Corliss engine, *1661
Pilling air engine, *406
Tod long cross blowing engine, *1139
Espen-Lucas Machine Works, 858, 1148, 1530
Exhaust steam, Utilization of, in the Poensgen Steel Works, Germany, *342
Exhaust steam nuisance, 416
Exposition ship, Pacific Coast, 873
Eyermann, P. Electric power from blast furnaces, 150
Export trade, 571

F.

Factory cost and business methods, 451, 509, 773, 841, 918b, 987, 1056, 1128, 1202, 1274, 1494
Faivrette clam shell bucket, *345
Fan, A, B, C, induced draft, *1156
Fawcus Machine Co., 1518
Fay, T. J. Steel for automobile use, 293
Federal Rate Regulation Association, 1173, 1232
Fence, Woven wire, Distribution of, 1572
Fence posts, Machine for making steel-concrete, *132
Fenders, Folding, *1653
Fernley, T. J., Portrait, *1340
Ferroalloy controversy, 535, 1323
Ferromanganese situation, 743
Finance. Revenue question and an extra session of Congress, 228
Fitchburg Machine Works, 1146
Flather, David. Case hardening of steel, *310
Flather, Mark, Planer Co.:
Combination open side planer, *208
Lathe, *76
Floor surfacing machine, Patch electric, *1374
Fly wheel explosions, 796
Follansbee Brothers Co., 1788
Foord, John. Railroad development in China, 1376
Foreign trade:
Opportunities for increased, 1425
Report on, 918
Forges, Buffalo five-tuyere, *341
Forging machine, Ajax Universal, *864
Forging methods, Modern, *1522
Foster, Herbert. Modern commercial and industrial accounting practice, 773, 841, 918b, 987, 1056
Foster Engineering Co., 1225
Fouché, E. Use of acetylene for self-welding, 1561
Foundry employers' movement, 1389
Foundry industry, Tendencies in the. By Richard Moldenke, 1671
Foundry trade school under proprietors' auspices, 537
Foundries:
Combined baby Bessemer and open hearth steel, *210
Increasing number of open foundries, 414
France, Iron industry in the Minette District, 1005
Freight account of a hardware merchant, 980
Freight tonnage of Pittsburgh, 1605
Freyn, H. Electric power from blast furnace gas, 1768
Fruit press, Yale, *261
Fuel oil, Developments in utilization of, 940
Fulton fuel economizer, *1290
Furnaces:
Fulton furnace, *1290
Harder gas furnace, *1298
Kjellin electric steel, *1010
Reducing ore with blast furnace gas, *1678
Round and square, for brass melting, 1439
Steele-Harvey metal melting, *736
Wire annealing, Warwick, *1082

G.

Garage pump and motor, *197
Gardam drill, *865
Gardner disk grinder, *1154
Garland, Robert, Portrait, *1339
Gas:
Regulating the price of, 615
Valuation of waste gas, 156
Gas and gasoline engines:
California Gas & Electric Co.'s plant, 807
Coasting trade and gas engines, 1614
Efficiency of, 974
Excelsior reversing gasoline engine, *1075
Loss in capacity of, at high altitudes, 1373
Nuremburg double acting four-cycle engine, *86, *160
Oil vaporizer for, 161
Pumping engines, Standard, *799
Robertson valveless automatic, *11
Strang, *938
Testing high power modern engines. By W. H. Spiller, *1683
Thompson automatic cut off, *1668
Gas furnace, Harder, *1298
Gas producers:
Backus suction, *469
Burger suction, *1668
Nagel, *343
Tests at St. Louis, 1609
Gas reversing valve, Fischer, *1684
Gas washer, Biam, *669
Gasoline motors, *269, *733
Gear cutter, Eberhardt, *1365
Gear drive, Roller, *734
Gem Mfg. Co., 733
German Steel Syndicate, First report of, 811, 857
Germany:
Alternative reciprocity proposition, 1379
Iron trade combinations, 906
Reciprocity treaty with U. S., 1261
Outlook for reciprocity, 874
Sale of machinery in foreign countries. By G. P. Altenberg, 1307
Glass cutters in display box, *323
Glen Mfg. Co., 451
Gold production of the world, 1114
Goodrich, C. L. Manufacturing methods, 1080
Gorton, W. S. Chain making by electric welding, 227
Gould & Eberhardt grinder, *157
Gould's water lifter, *220
Graham-Phillips Horseshoe & Iron Co., 1185
Great Britain:
Cleveland pig iron gamble, 738
German-British turbine controversy, 743

Great Britain:
Hardware trade, 124, 383, 577
Industrial lesson from London, 885
Manufacturers' Association, 47
Notes, 189, 286, 481, 593, 647
Great Lakes, Raising level of, 806
Green economizer, 538
Greenaway steel plate receiver separator, *285
Grimshaw, Robert. The care of patterns, 1697
Grinding attachment, Landis concave and convex cutter, *217
Grinding machines:
Cincinnati traverse grinder, *663
Gardner disk grinder, *1154
Gould & Eberhardt electrically driven, *157
Heald cylinder grinder, *274
Knife grinder, Special automatic, *723
Ransom motor driven, *1530
Sprue grinder, Automatic, *1005
Stow electric emery, *1371
Grindstone, Wilcox Ideal, *846
Gronvold boiler flue cleaner, *735
Gruson, Otto, & Co., Foundry, *210
Guillet, L. Special steels, 347
Guns, Remington, *325
Gutermuth patent valve, *6

H.

Hall, H. B. Operating a charcoal furnace on 100 per cent. concentrates, 531
Halsey steam truck, *671
Hamilton iron mine, Unwatering. By J. T. Jones, 1222
Hammacher, Schlemmer & Co., Inventory methods, 1496
Hanging Rock properties, Negotiations for, 1464
Harbison-Walker Refractories Co., 1679
Harder gas furnace, *1298
Hardware ads, 1200, 1201
Hardware associations, List of, 1270
Hardware merchants:
Hints to, 454, 572, 649, 710
Retail hardwaremen. By J. B. Moody, 190
Hardware trade, 48, 121, 184, 246, 313, 375, 437, 506, 568, 641, 704, 767, 833, 908, 976, 1048, 1116, 1193, 1262, 1330, 1412, 1487, 1563, 1636, 1715, 1789
Restriction of output, 539, 646
Russian reciprocity, 452
Hartshorne, Joseph. Experimental desulphurization, 1306
Harvey steel rotary cases, 1369
Haynes-Apperson Co., 734
Head, A. P., and Landro Cubillo. The manufacture of cartridge cases, *1746
Heald cylinder grinder, *274
Heat of the sun, 809
Heating and welding of metals, 1561
Hod, Steel mortar and brick, *64
Hoefer Mfg. Co., 867
Hoho, Paul. Heating and working metals by electricity, 1562
Hoisting plants:
Ironwood, Mich., *730
Water hoisting plant at Hampton mines, *1437
Hoists:
Chain hoist, *219
Niles electric traveling, *10
Holdback fastener, *133
Hooven, Owens, Rentschler Co., 1526
Horse nail, Vulcan, *64
Horseshoe episode, 1054, 1124
Hose, Flexible steel armored, 733
Hose coupler, Chicago, *1373
Hot blast stove, White and Kernan, *1009
Hughes smoke preventer, *1226
Hulett ore unloader, *272
Husker, Adjusaable hook, *846
Hydrant, Murdock, *579
Hydraulic riveter, German, *1739

I.

Ice cream freezer, Gerner continuous, *1578
Ice creepers:
Perfect, *781
Stand Pat, *260
Idaho, Business conditions in, 915
Ilgner, Carl. Gas or electric motor for roll driving, 1294
Illinois Manufacturers' Association, 1665
Illinois Steel Co., 1005, 1406
Immigrant settlement in the West, 23
Immigrants needed in the South, 1167
Imperial Steel & Wire Co., 104
Implement Dealers in convention, 1725
Import appraisements, 541
Indexing methods, Machinery catalogues, 1085
Industrial bonuses, An experience with, 810
Industrial engineering, 1610
Industrial engineering, Financial end of. By A. E. Dixon, 878
Industrial journalism up to date, 1765
Industrial lesson from London, 885
Ingots, Preventing pipes in large, *861
Inland Empire Implement and Hardware Dealers' Association, *578
Insurance:
Litigation for employees, 226
Self insurance, 545
International Steam Pump Co., 104
Interstate Commerce Commission, Larger powers for, 1688, 1693
Inventory methods, 1273, 1419, 1496, 1576, 1577, 1643
Invoices, Consular and pro forma, 340
Iola Portland Cement Co., 1522
Iowa Hardware Dealers' Mutual Insurance Association, 250
Ireland, T. F., Address by, 448
Iron:
British pig iron for foundry use. By P. Munnoch, 639
Buoyancy of cast iron, 348
Cast iron, Cases of hard. By Henry Souther, 283
Paper as protection for. By L. H. Barker, *148
Pig iron grading by analysis. By H. Buel, 154
Testing methods for cast iron. By Richard Moldenke, 98
Iron Age:
Index published, 96
New printing plant, 1460
Roberts, H. H., Resignation of, 544
Iron and industrial stocks, 45, 113, 243, 312, 369, 427, 499, 565, 636, 688, 745, 825, 899, 967, 1038, 1108, 1184, 1254, 1405, 1478, 1554, 1628, 1707, 1783
Iron and metal trades, 31, 105, 169, 231, 296, 360, 422, 490, 552, 624, 689, 750, 817, 892, 960, 1031, 1101, 1177, 1247, 1315, 1398, 1469, 1547, 1621, 1699, 1776
Iron and steel contracts, Record, 22
Iron and Steel Institute, 1014
Iron and steel production:
Blast furnace capacity increasing, 353
British report on iron ore deposits, 144
British steel output first half of 1905, 1168
Canadian pig iron statistics, 410
Charcoal iron industry, 544
Exhaustion of the world's iron ore supplies, 435
Iron ore production in 1904, 19
Lake iron ore explorations, 757
Lake District, 480, 595, 668, 812, 868, 1233, 1450, 1691
Lake Superior iron mining, 356
No ore famine imminent, 97
Ore shipments at the maximum in June, 11
Pennsylvania statistics, 1007
Pig iron production for the first half of 1905, 244
Pig iron production increasing, 956
Pig iron stationary, 685
Productive capacity of iron heavily reduced, 100
Record production in October, 1243
Rolled iron, Steady consumption of, 164
Swedish Government report: Personal equation and the life of ore reserves, 1536
World's iron ore supply, 1158
World's pig iron production, 415
Iron and steel production:
World's production, 700
World's production of finished iron, 483
Iron and steel trade:
Adjustments of capacity to demand, 482
August exports and imports, 883
Bess. & Lake Erie R. R. record, 684
Better distribution of demand, 415
British and continental iron trade, 158
British exports in 1904 and 1905, 808
British iron trade in 1904, 418
British speculation in Cleveland pig iron, 738
British iron prices advancing, 860
Conservatism, Incitements to, 1092
Extravagant predictions of ore shipments, 1023
Foreign trade and domestic production of iron and steel, 226
Higher prices on German export steel, 857
Increasing pig iron production, December, 1617
July iron and steel exports and imports, 618
June exports and imports, 271
Lake Superior iron ore trade in 1905. By D. E. Woodbridge, 1756
Lake Superior-Colorado ore deal, 466
Lake vessel capacity in excess of the traffic, 614
May exports and imports, 5
October imports and exports, 1520
Ore properties sold to consumers, 1020
Production of steel companies and merchant furnaces, 1022
Record breaking ore shipments in August, 417
Remarkable situation in Lake Superior trade, in December, 1613, 1629
Rotterdam ore imports, 669
Scarcity of special pig irons, 1239
Scotland, 1074
Sept. exports and imports, 1160
Texas iron industry. By E. C. Eckel, 478
World's prosperous iron trade, 742
Iron and steel works, 28, 101, 167, 229, 294, 358, 419, 488, 549, 621, 686, 747, 814, 889, 957, 1028, 1098, 1174, 1244, 1313, 1394, 1467, 1545, 1619, 1695, 1774
Iron City Chain Works, 1089
Iron Molders' Union in 1905, 1685
Iron ore analysis at Lake Superior mines. By W. A. Siebenthal, 1242
Iron ores, Process for converting, into nodules, *589
Ironing board stand, *455
Ironing table, Folding, *581

J.

Jack, Quick lift auto, *326
Jackson, W. A. Good methods in stock taking, 56
Jacksonville Exposition, 405
Jacob *vs.* Cohen, 1517
Jeffrey, W. M. Accounting system for mining supplies, 1086
Jet condensers, Duplicate Burnham, *282
Job, Robert. Causes of rail failures in service, *92
Johnson, H. A.:
A plan for local hustling, 1122
Christmas advertising, *1641
Hints to hardware merchants, 454, 572, 649, 710
Joints, Reinforcing brazed, *537
Jones, J. T. Unwatering the Hamilton iron mine, 1222
Jones Hardware Co., Inventory blanks, 1499
Jones & Laughlin Steel Co., 1439, 1518
Joseph Wharton properties, 666
Jottrand, F. Heating and welding of metals, 1561
Journalism, Industrial, up to date, 1765

K.

Keep sectional cupola, *532
Kempsmith vertical milling attachment, *156

Keyseating machines, Barnes, *1675
Kjellin electric steel furnace, *1010
Knives, Dexter brand, *324
Knoth slag process for manufacturing steel, 79
Krause, W. T. Steele-Harvey brass furnace tests, 737
Kretsinger, F. S., Portrait, *1337
Krupp Works, Description of, 741

L.

La Belle Iron Works, 763, 1254, 1396, *1511
Labor notes, 46, 111, 168, 237, 357, 566, 613, 695, 765, 813, 882, 975, 1027, 1115, 1185, 1466, 1635, 1694
Labor question:
Anthracite strike, Threat of another, 680
Apprentice system, The modern, 1092
British labor unions, Fewer strikes by, 1537
Cities competing for skilled labor, 1022
Closed shop contract held to be valid, 1517
Encouragement of employees, 509
Engineering schools and the unions, 951
Labor bureau and the labor famine, 1389
Litigation insurance for employees, 226
Picketing, Closely defining, in England, 1766
Problem of the unemployed, 681
Restriction of output, Government report, 474
Superintendents should not act as workmen, 24
Workmen's homes, 288
Labor union's "right" of compulsion, 808
Lake shipping news, 1528
Lake Superior Corporation, 937
Lake Superior iron mining, Combination in, 356
Lake Superior Mining Institute, 1090
Lake vessel capacity in excess of the traffic, 614
Lamp holder, Philadelphia radial, *579
Lamps:
Ham automobile, *199
Ham driving, *133
Landis grinding attachment, *217
Lathe dog, Patent quick acting, *992
Lathe gearing, Steel *vs.* cast iron, 886
Lathes:
American 42-inch engine lathe, *1004
Blount motor driven, *877, *1295
Draper convertible gap, *731
Draper 18-in. geared head, *1
Dreses universal monitor, *337, *1535
Fitchburg "Lo-swing" lathe, *1146
Flather quick change feed, *76
Niles extra heavy driving wheel lathe, *468
Niles heavy ingot slicing lathe, *1229
Ridgway heavy driving wheel, *1071
Roll lathe with automatic change speed gearing, *608
Lawn mower sharpener, *1729
Leavitt peat machine, *1001
Letters from the trade, 985, 1197, 1418, 1491, 1571, 1639, 1797
Level, Builders, Bostrom, *675
Level, plumb and inclinometer, *197
Lidgerwood Mfg. Co., 1745
Liége Congress of Mining and Metallurgy, 214
Lifting magnets, Cleveland, *1759
Link-Belt elevator bucket, *476
Locke Regulator Co., *1078
Locomotives:
Building, in 1905, 1740
Drawback regulations, 677, 728
Electric, N. Y., N. H. & H. R. R., 871
London, An industrial lesson from, 885
Long Island R. R., Electrification of. By S. D. V. Burr, *1141
Lowery, A. J., Portrait, *1272
Luermann cinder tap, 1094, 1168, 1766
Lukens Iron & Steel Co., 1438
Lunkenheimer Co., 536
Lutz Tool Co., 875

M.

McCarty, F. P., on meeting catalogue house competition, 511
McClintic-Marshall Construction Co., 1089
McCune steel tie, *803
Machine tool design, Progress in, 1167
Machine tools for the Navy, 1241
Machinery:
American, in the Philippines, 619
How Germans sell in foreign countries. By G. P. Altenberg, 1307
Machinery trade:
Chicago, 40, 115, 180, 240, 306, 367, 430, 502, 560, 632, 698, 758, 827, 901, 969, 1040, 1112, 1187, 1257, 1327, 1408, 1480, 1557, 1632, 1710, 1785
Cincinnati, 41, 117, 179, 430, 503, 561, 632, 699, 760, 828, 901, 970, 1040, 1112, 1189, 1328, 1482, 1558, 1633, 1712
Cleveland, 179, 504, 699, 760, 903, 1042, 1259, 1411, 1483, 1713
Indianapolis, 1410
New England, 39, 117, 178, 239, 305, 429, 501, 559, 631, 697, 761, 828, 903, 969, 1041, 1113, 1189, 1258, 1327, 1409, 1481, 1559, 1632, 1712, 1786
New York, 38, 114, 177, 238, 304, 366, 428, 500, 558, 630, 696, 758, 826, 900, 968, 1039, 1110, 1186, 1256, 1325, 1407, 1479, 1556, 1630, 1709, 1784
Philadelphia, 41, 116, 180, 241, 307, 368, 431, 504, 560, 633, 698, 759, 829, 902, 971, 1041, 1111, 1188, 1258, 1326, 1409, 1482, 1557, 1631, 1711, 1785
Machinery commission annoyances, 164
Machinists' organizations and the regulation of production, 539, 646
Magnetic separator, Ball & Norton belt type, *1367
Magnets, Cleveland lifting, *1759
Maltitz, E. von. The Bertrand-Thiel process, 349
Manganese ore production in 1904, 118
Manicure, Red Devil, *198
Manson, J. A. The retailer-jobber, 380
Manufacturing industries, Taxation of, 1238
Manufacturing methods. By C. L. Goodrich, 1080
Manufacturing trades and the restriction of output, 539, 646
Mark Flather Planer Co., 76, 208, 1153
Maryland's iron and steel industry, 1486
Matthews, A. M., & Co., Seasonable goods, List of, 1198
Mechanical draft, Economies of, 148
Mechling, W. A. The house and the salesman, 1423
Meeks, Reginald. Experimental desulphurization. By R. Meeks, 1227
Menominee range. By J. L. Buell, 1519
Merchants' National Audit Co., 989
Mesta Corliss engine, *1661
Metal exports for the fiscal year 1905, 289
Metal melting furnace, Steele-Harvey, *736
Metal prices, High, 1612
Metals, Heating and welding of, 1561
Mexico:
Exports to Mexico, 271
Iron developments, 676
Monetary and tariff changes, 144
Trade notes, 472, 673, 866, 1161, 1392, 1597, 1758
Michigan copper mining notes, 1673
Michigan Retail Hardware Dealers' Association, 250, 377, 442, 447
Michigan Smelting Co.'s Works, 679
Micrometer calipers, Davis', *804
Micrometer holder, Billings', *1207
Midland Steel Co., 78
Miles, S. R. Portrait and address by, *1341, 1349
Milliken Brothers, 1388
Milliken Brothers and a projected steel plant, 312
Milling attachment, Kempsmith vertical, *156
Milling machines:
Becker-Brainard, *1458
Newton heavy duplex, *1151
Newton special duplex, *145
Milton, J. T. Fractures in large steel boiler plates, 477
Milwaukee mechanical engineers, 9
Milwaukee School of Trades, 1237
Milwaukee Society of Mechanical Engineers, 731
Miner & Peck Mfg. Co., 946
Mining contracts, Important, 1604
Mining equipment at the Monroe and Tener mines, 944
Minnesota attacks ore leases, 547
Minnesota contest over ownership of ore lands, 85
"Misapplied genius," 165
Missouri's mineral production, 1108
Mitchell, F. D., Portrait, *1339
Mitchell, John, his agitation in the anthracite region, 680
Moldenke, Richard:
Methods for testing cast iron, 98
Tendencies in the foundry industry, 1671
Molding, New multiple process, for relatively deep work. By E. H. Mumford, *804
Molding machine:
Mumford, *534
Operation of, 1385
Molding sand production in 1904, 728
Molds for steel castings, Preparation of. By Arthur Simonson, 1044
Mop head and detachable handle, *1652
Morgan Spring Co., 181, 1616
Morley Bros., Saginaw, Mich., *514
Moroney, James, Portrait, *53
Mumford, E. H. A new multiple molding process for relatively deep work, *804
Munnoch, P. British pig irons for foundry use, 639
Mutual insurance, 516
Mutual Trading Co., 917

N.

National Association of Agricultural Implement and Vehicle Manufacturers, 918
National Association of Bituminous Coal Mine Operators, 1439
National Cycle Trade Association, 251, 318
National Enameling & Stamping Co., 418
National Founders' Association, 1074, 1221, 1323, 1380, 1389
National Hardware Association, 1198, 1265, 1335
National Machine Tool Builders' Association, 1046, 1538
National Metallurgic Co., Newark Bay, N. J., *589
National Reciprocity Convention, 496
National Wire Corporation, 943
Natural gas production in 1904, 1073
Naval shops of the near future, 1538
Navy Department:
Economy in naval expenditures, 1368
Naval Bureau of Ordnance, Report, 1524
Report of Chief Constructor Copps, 1741
Secretary's report, 1521
Substitution in Government awards, 1690
Navy Department purchases, 42, 117, 181, 307, 368, 432, 505, 562, 634, 700, 762, 830, 904, 972, 1043, 1114, 1190, 1260, 1329, 1484, 1559, 1633, 1713, 1787
Navy yard construction, 1027
Net profits, Overestimated, of good times, 884
New Britain Machine Co., 1157
New England Foundrymen's Association, *1006, 1235, 1745
New England Iron League, 12
New Haven Iron & Steel Co., Report, 800
New Jersey Bridge Co., 183
New Jersey Hardware Merchants' Association, 1795
New Orleans notes, 195, 574, 1128
New Orleans ordinance concerning the storing of water, 779
New York barge canal, 673
New York State Association of Hardware Jobbers, 1272
New York State Steel Co., 763, 1459

Newton Machine Tool Works, 145, 1151
Niagara Falls:
Electrical matters at, 1675
Preservation of, 1612
Ten years of electric reduction at, 405
Niagara Machine & Tool Works, 472, 859, 1077
Niles Tool Co. 10, 207, 468, 1229, 1363
Nodulizing of iron ores, *589
Norton Grinding Co., 1085
Northwestern Expanded Metal Co., 667
Norvell, S., Portrait, *1340
Norvell's Arkansas creed, 188
Nut, Lock, Smith, *518
Nut tapper, Tyler automatic, *1764

O.

Obituaries:
Adams, C. C., 1124; Allen, L., 906; Atkinson, B. F., 979; Atkinson, Edward, 1618; Avery, C. M., 813
Bailey, G. C., 1312; Ballard, G. M., 1544; Barnes, J. P., 1708; Bartlett, E. L., 955; Best, T., 905; Bewley, C. I., 1312; Boardman, N. S., 225; Bothwell, J. J., 1397; Brigham, A. G., 1025; Brown, Edward, 1097; Brown, S. S., 1618; Buck, Charles, 651
Capen, A. B., 1173; Carpenter, Alva, 46; Chapman, James, 745; Chisholm, William, 1618; Coldwell, Thomas, 319; Cornell, Birdsall, 225; Cushman, D., 955.
Daelen, R. M., 497; Deemer, J. J., 181; Delany, P., 695; Dravo, J. F., 906.
Evans, David, 497
Fletcher, Andrew, 365
Gardam, William, 46; Gill, J. L., 1312; Greene, D. M., 1312
Hartzell, E., 710; Haseltine, R. M., 745; Haupt, Herman, 1708; Healy, R. A., 813; Heckscher, M., 906; Hillman, T. T., 617; Hinkley, G. H., 1708; Hobart, N. P., 1026; Hohlfelder, Frederick, 618; Horne, W. M., 181; Hoskins, F. B., 813; Howard, Henry, 813; Hull, L. L., 103; Hunter, W. W., 1097
James, D. H., 1272; Jessop, William, 225; Jones, W. I., 1544
Klipp, F. H., 1025; Knecht, V. M., 1026; Knisely, R. W., 1397
Ladew, E. R., 618; Laughrey, J. R., 1465; Levy, E. L., 1246; Lord, C. V., 906; Ludlow, G. W., 365
McKee, W. W., 46; Maher, T., 905; Mann, J. F., 1490; Merrill, S. T., 1173; Merry, H., 905; Miller, F. H., 955; Mills, C. E., 618; Mills, G., 1312; Morris, Israel, 1708; Moulton, D. C., 1465; Mulvey, Charles, 1619
Nash, E. W., 225; North, Jacob, 745
Oliver, J. B., 1465; O'Neil, J. A., 53; Orgill, E., 775; Orr, F. B., 1640; Otis, C. A., 46; Ott, Ben, 1025
Parker, O. A., 618; Patterson, William, 617; Pearce, J. W., 1173; Pearson, J. M., 1618; Perry, A. L., 103; Pitkin, A. J., 1396; Playsted, F. W., 181
Rankine, W. B., 905; Rice, John, 1312; Rood, V. H., 695; Rumbold, G. C., 618
Salisbury, S., 1465; Sears, Henry, 1416; Shaler, H. L., 645; Shaw, T. J., 181; Shire, D., 695; Silsby, H. C., 413; Sloat, H. R., 1618; Smith, T. G., 1465; Southgate, P. W., 1618; Spaeter, C., 1097; Spencer, H. S., 1025; Stevens, P. F., 1312; Stites, A. C., 618
Taft, T. F., 955; Turney, Joel, 103
Veith, J., 955
Wallace, Samuel, 1312; Weaver, H. F., 1708; Wells, T. H., 617; Wheeler, E. A., 563; White, J. E., 1173; Whitely, W. G., 1708; Whitten, N. H., 618; Wilcox, H., 1203; Wiley, J. A., 745; Wilson, F. C., 1544; Wilson, John, 365; Wilson, W. R., 225; Wolfe, E. W., 695; Wood, A. W., 413; Wyman, H. W., 1025
Ogden, Utah, and new industries, 798
Ohio River-Lake Erie canal, 950, 1240
Oil, Fuel, Developments in utilization of, 940
Oil filter, American unit type, *872
Oil industry in the U. S. in 1904, 12
Oil vaporizer for gas engines, 161
Oklahoma and Indian Territory Hardware and Implement Association, 255
Oliver Brothers Purchasing Co., 441
Oliver Iron Mining Co.'s ore shipments, 1670
On the Warpath; verses, 651
Ontario and the tariff, 1440
Ontario's mining law, 1686
Ontario Power Co.'s hydro-electric plant, 166
Open hearth furnace comparisons. By A. D. Williams, Jr., 740, 1532, 1767
Open hearth molten metal processes, 609
Open hearth process, Progress in, 1765
Ordnance Report, 1680
Ore unloaders, Hulett automatic, *272
Orgill, Edmund, Sketch of, *775
Orr, Frank B., Death of, *1640

P.

Pacific Coast iron developments, 676
Pacific Coast shipping problem, 2
Pacific Coast trade news, 291, 378, 404, 530, 670, 795, 941, 1115, 1372, 1525, 1667
Packing, Steam, IXL, 273
Padlocks, Display of, *456
Paint and paper as protection for iron and steel. By L. H. Barker, *148
Painting steel cars, 15
Paints in the hardware store, 709
Palace Hardware Co., Inventory methods, 1498
Paper as protection for iron and steel. By L. H. Barker, *148
Parcels post, 318. By W. P. Bogardus, 449, 1493, 1644
Passaic Steel Co., 1512
Patch, F. R., Mfg. Co., 1374
Patrick, H. W. Should hardware dealers confine their buying strictly to hardware jobbers and manufacturers? 57
Patterns, Classification, designation, marking and storage of. By Robert Grimshaw, 1697
Payne's hardware, *1798
Payroll form, An unusual, 1128
Peat machine, Leavitt, *1001
Pedrick & Smith pipe bender, *1682
Pender, James, & Co., St. John, N. B., 1500
Pennsylvania Engineering Works, 1486
Pennsylvania Steel Tie Co., 638
Perkins, F. C.:
An English coil clutch reversing gear, *1598
Heavy German shears and presses, *397
High power Parsons turbines, *1223
Perkins, G. W., Testimony before State Investigating Committee, 744
Personal equation and the life of ore reserves, 1536
Personals, 27, 113, 163, 225, 302, 365, 413, 499, 566, 621, 682, 765, 813, 888, 955, 1026, 1095, 1173, 1261, 1312, 1397, 1465, 1544, 1614, 1707, 1773
Pessano, A. C., Address by, 1380
Philadelphia Foundrymen's Association, 674, 946, 1221, 1593
Philippines:
American machinery in the, 619
Iron and steel imports, 1329
Iron ore and other minerals, 975
Phillips Sheet & Tin Plate Co., 1009
Pickands, Brown & Co.'s new blast furnace, 634
Picketing, Closely defining, in England, 1766
Pickle, Acid, for iron and steel, 801
Pig iron. (See Iron.)
Pilling air driven machinery, *406
Pipe, Steel concrete, Experiments, 871
Pipe bender, Pedrick & Smith, *1682
Pipe casting in a rotary mold. By C. B. Straus, *599.
Pipe crushing and shearing machine, *795
Pipe threading machine, Hoefer, *86
Pipe threads, British standard, 432
Pipe trade, Cast iron pipe, 1304
Pipe welding, Thermit, 1294
Pit car loading machine, *1230
Pittman, C. F. Best methods of reaching country trade, 58
Pittsburgh Construction Co., 563
Pittsburgh Foundrymen's Association, 683, 887, 1618
Pittsburgh Industrial Iron Works, 1462
Pittsburgh open hearth steel trade, Growth of, 1461
Pittsburgh Rivet Co., 148
Pittsburgh Tube Co., 562
Planers:
Flather combination open side, *208
Flather four-speed device for, *1153
Ridgway, *1285
Plate mill, La Belle 84-inch, *1511
Platinum production in 1904, 1115
Platinum wire, Invisible. By S. D. V. Burr, 1019
Pliers:
Bonney New Climax, *198
Combination, *131
Pope Mfg. Co., 1682
Portsmouth-Steel Co., 1171
Post, Marvin C., Store, *1801
Post Office Department:
Recommendations of, 1721
Rural delivery order, 249, 772, 844, 916, 983, 1053, 1121, 1334
Powell White Star valves, *949
Pratt, W. M.:
Portrait and address by, *1338, 1346
Reciprocity, 1424
Prentice, George G., Co., 1454
Press connections, Bliss, *1760
Presses:
Bliss horizontal horseshoe bending, *1375
Bliss special double crank press, *947
Heavy German presses. By F. C. Perkins, *397
Niagara double crank power, *859
Toledo toggle drawing, *1531
V. & O. special geared, *80
Prices, Restricted; letters from jobbing houses, 191, 253, 385
Prices of metals, 1612
Princess Furnace, 1685
Producer gas tests at St. Louis, 1609
Pumping engines, Standard gas and gasoline, *799
Pumps:
Automobile air pump, *388
Brooks centrifugal, *402
Buffalo centrifugal, *674
Buffalo underwriter fire pump, *8
Folding force pump, *132
Turbine pumps, Modern. By O. H. Mueller, *724
Punch and shear:
Bement-Mills, 94
Buffalo combined, *1008
Punching and reaming structural steel, 1169
Punching press, Bliss, *284

R.

Rack for screen wire, *982
Rail failures in service. By Robert Job, *92
Rail mill of Republic Iron & Steel Co., *1217
Rail pool, International, 22
Rail trade, Foreign steel, 414
Railroad rates:
Conventions at Chicago, 1173
Illinois, 1597
Pacific Coast sentiment, 1232
Railroad terminals inadequate, 614
Railroads:
Boston & Worcester Street Ry., Power plant of, *527
China, Development in. By John Foord, 1376
Competitive railroad building, 1390
Duluth, Missabe & Northern Ore traffic, 1364
Foreign trade notes, 1539
Gas engine driven single-phase railway system, 1185

Railroads:
Long Island, Electrification of. By S. D. V. Burr, *1141
Penn., Income, 96
Statistics for 1904, 467, 1255
Railway Appliances Co., 729
Ransom Mfg. Co., 1530
Ratchet, Weston, *261
Rattle, W. J., & Son. Cargo sampling of iron ores at Lake Erie ports. By W. J. Rattle & Son, 1162
Razor strop, Automatic, *1002
Reciprocity:
Americans in Paris urge, 1687
Discussion. By W. M. Pratt, 1424
Reeves & Co. as automobile builders, 403
Refrigerator levers, *388
Refrigerator market, 1125
Regulators, Pressure, Waring, *1006
Reinforced concrete shop construction, 1608
Reinforcing brazed joints, *537
Reliance Edge Tool Co., 1490
Reports to non-technical clients, 885
Republic Iron & Steel Co., 1108, 1176, 1306, *1217
Retailer-jobber. By J. A. Manson, 380
Revenue legislation prospects, 1163
Revenue question, 228
Revord & Holmes, Austin, Minn., Advertising methods, 709
Ridgway horizontal boring machine, *4
Ridgway Machine Tool Co., 1071, 1285
Riverside Engine Co., 1368
Riveter, German hydraulic, *1739
Roberts, H. H., Resignation of, 544
Roberts, T. P. Lake Erie-Ohio River ship canal, 1240
Robertson gas and gasoline engines, *11
Robertson Mfg. Co., 1303
Rock formation, Curious, *1605
Rockaway Rolling Mill, 1149
Roebling enterprise at Kinkora, N. J., 1457
Roll driving, Gas or electric motor for. By Carl Ilgner, 1294
Roller gear, Novel, *734
Rolling mill waste products, Greater demand for, 1766
Roofing, Tin, Terne plates for, 549
Rope, Mixed and adulterated, 1796
Rothberg by-product coke oven, *855
Rotterdam as a shipping port, 669
Rubber belting and the machine for making it, *278
Rules, Tempered hook, *1652
Rural free delivery and the catalogue houses, 249, 772, 844, 916, 983, 1053, 1121, 1334
Russia:
Commercial benefits of the war, 616
Customs tariff schedules, 840
Reciprocity and the hardware trade, 452
Trade prospects, 637, 708
Rusting in machine shops, 97

S.

Safety Emery Wheel Co., 723
St. Mary's Falls canal, Semicentennial of the first, 341
Salesman and the house. By W. A. Mechling, 1423
Salesmen, Manufacturers', Methods and prices of, 1800
Sampling of iron ores at Lake Erie ports. By W. J. Rattle & Son, 1162
Sardy, John L., and foreign trade, 979
Sargent steam meter, *152
Saw filer, New Britain band, *1157
Saw set and vise, Atkins perfect, *918f
Saward, F. E.:
Bituminous coal market, 953
Coal situation as regards labor, 1534
Coal trade, 1463
Consumers should buy coal, 764
Use of soft coal in New York City, 1003
Saws:
Armor plate sawing, *465
Fergusson friction metal, *346
Kickdrive circular, *155
Robertson rapid cut power, *1303
Sterling power hack saw, *405
Taylor-Newbold saw, *942
Toothless cold. By G. D. Sewall, 1676
Scales, Standard larry, *876
Schieren, C. A., & Co.'s new belt factory, *601
Schneider, Herman. Co-operative education, 1744
Scotland, Iron and steel trade, 613, 810, 1074, 1457, 1611, 1760
Scott, A. J., Portrait of, *444.
Scott, O. M., & Brother, Marysville, Ohio, 1415
Scranton Bolt & Nut Co., 468
Scraper, Lutz universal, *875
Scratch brushes, Osborn, *918g
Screen selling company formed, 1271
Screw drivers, Elmore, *326
Screw makers, Compact between English and German, 838
Screw threads, British standard, 432
Scullin-Gallagher Iron & Steel Co., 936
Seaming machine, Niagara double power, *1077
Season goods, List of, 1198
Secretaries' Association, Meeting of, 837 918d
Selling goods a profession. By F. B. Ellsworth, 1793
Selling machinery for securities, 483
Selling prices, Restricted. By A. W. Douglas, 126
Separator, Greenaway steel plate receiver, *285
Sewall, E. D. The toothless cold saw, 1676
Sewing machines a profitable line for the hardware merchant, 1205
Seymour rotary balancing machine, *1679
Shaft coupling, Diescher, *159
Shaft sinking, Difficult, at Detroit, 876, 1300
Shaler, N. S., on the exhaustion of the world's iron ore supplies, 435
Sharpener and steel combined, Peerless, *325
Shaving sets, *457
Shaw, J. E. Lake Erie-Ohio River ship canal, 1240
Shearing machines:
Davis Universal, *594
Heavy German shears. By F. C. Perkins, *397
Hydraulic vertical billet shear, *670
3000-ton hydraulic slab shear with special feeding device, *606
Sheet and tin plate scale, 45
Shipbuilding:
Lake, 615
Scotland, Activity in, 1295
Shovel industry, 1058
Siberia, American hardware in, 510
Siebenthal, W. A. Iron ore analysis at Lake Superior mines, 1242
Silver production of the world, 1114
Simmons, E. C. Special brands, 188
Simmons Hardware Co., 707, 915
Simonds Mfg. Co.:
Annual meeting, 1490
Coal handling apparatus, *73
Simonson, Arthur. The preparation of molds for steel castings, 1044
Simplon tunnel, 1370
Sink strainer, Vrooman, *990
Slag cement plant, Ashland, *141
Sled, Flexible flyer, *456
Sloss-Sheffield Steel & Iron Co., Report, 686
Smelting of magnetic iron ore by electricity, 1742
Smoke nuisance in the Atlantic cities, 808
Smoke preventer, Hughes automatic, 1226
Smoke vents in theatres, *1540
Souther, Henry. Some cases of hard cast iron, 283
Southern Hardware Jobbers' Association, 1054
Southern Steel Co., 1605
Special brands. By E. C. Simmons, 188, 386, 453, 515
Factory brands, 915
Mean inferior quality, 1639
Special brands and unknown manufacturers, 252
Value to the retail hardware man, 56
Specifications:
Bridge steel, 16
Cast iron car wheels, 162
Manhattan bridge, *222
Steel rails, 17
Sperry, J. B., Portrait of, *443
Spiller, W. H. Testing of high power modern gas engines, *1683
Sprayer, Brandt, *1580
Squares:
Combination, *198
New Universal, *1652
Stamp, Perry time, *715
Stamp and envelope moistener, *198
Standard Scale & Supply Co., 876
Standart, E. B., Portrait of and address by, *443, 448
Star Enameling and Stamping Co., 1500
Stay bolts, Solid, flexible, and hollow, 1016
Steam generator, Rateau, *342
Steam meter, Sargent, *152
Steam shovels on the Mesaba, 146
Steam trap, Cookson, *1674
Steam turbine business, 152
Steam turbines:
Allis-Chalmers, 1366, *1601
German-British controversy, 743
High power Parsons turbines. By F. C. Perkins, *1223
Marine turbines, 354
Marine turbines in tropical waters, 1690
Reserve power in water transmission systems, 1788
Test of De Laval turbine after two years' service, 3
Tests of Westinghouse turbines, 145
Steamships:
"Amerika," 1096
Joseph G. Butler, Jr., Launching of, 1244
Restrictions for small power boats, efforts of pilots' association, 401
Steel:
Automobile use of steel. By T. J. Fay, 293
Bertrand-Thiel process. By E. von Maltitz, 349
Case hardening of. By David Flather, *310
Cost of high speed and self-hardening steels, 3
Heat treatment, 1444
High speed steel in the machine shop, 636
Knoth slag process for manufacturing, 79
Open hearth molten metal processes, 609
Paper as protection for. By L. H. Barker, *148
Scarcity of semi-finished steel, 680
Special steels. By L. Guillet, 347
Specifications for bridge steel, 16
Steel forgings customs decision, 153
Steel hardening metals, Production, in 1904, 672
Steel ingots, Preventing pipes in large, *861
Steel scrap situation, 1391
Steele-Harvey brass furnace tests. By W. T. Krause, 737
Steele-Harvey metal melting furnace, *736
Stoker, Fulton automatic, *1290
Stove pipes in coils, *131
Stove repairs, Ordering, 1119
Stove trade, Evolution of, 56
Stow Mfg. Co., 1371
Straining and seeding press, *63
Strang Engine Co., 938
Strang, C. B. Casting pipe in a rotary mold, *599
Strikes:
Anthracite, threatened, 680
British labor unions, 1537
Chicago teamsters, 293
Waste of machinists' wages, 1023
Stropping machine, Kampfe, *1653
Stupakoff, S. H. The manufacture and properties of charcoal, 542
Sturtevant, B. F., Co., New plant, *789
Sun, Heat of the, 809
Supply and machinery dealers' meeting, 1466

Sweden:
Government report on the iron ore supplies of the world, Comments on, 1536
Lapland iron mines, 1155
Iron and steel output in 1904, 866

T.

Tack puller, Bi-Ped, *61
Tariff:
Alloy for manganese bronze, 217
Customs decisions, 285, 734, 794, 875, 973, 1021, 1079, 1165, 1231, 1391, 1441, 1529, 1592, 1674, 1787
Cylinders, Large steel, 877
Diamond steel, 85
Metal patterns, 1478
Ontario's views, 1440
Prospects for legislation, 945
Reciprocity. By W. M. Pratt, 1424; 1687
Scrap iron and steel, 270
Steel strip bearings, 671
Steel strips, 24
Steel wool duty, 407
Tariff in the new Congress, 1761
Tinned steel wire heddles, 535
(See also Drawback.)
Taxation of manufacturing industries, 1238
Taylor-Newbold saw, *942
Technical Publicity Association, 1226
Telephone rates in New York, 453
Tennessee Coal, Iron & R. R. Co., 1691
Testing cast iron, Methods for. By Richard Moldenke, 98
Testing engineer, The. By C. B. Dudley, 25
Testing methods, Standard, 13
Texas, Iron industry of. By E. C. Eckel, 478
Thanksgiving advertising, 1269
Theatres, Smoke vents in, *1540
Thompson-Burger gas producer and engine, *1668
Thread cutting machine for wood, Defiance, *84
Thread rolling machine, Acme, *1666
Ties:
Concrete, Results with, 605
McCune steel tie, *803
Reinforced concrete, 401
Tin plates in Canada, 637, 952
Tin production in 1904, 119
Tire inflator, Bonnett, *880
Tod long cross head blowing engine, *1139
Toledo Machine & Tool Co., 1531
Tool grinder, Cook portable, *1740
Tool kits:
Naponack pocket, *63
Pocket interchangeable, *197
Tool post, Espen-Lucas portable, *1530
Tools, Selling radically new, 227
Torpedo, Bliss-Leavitt, *1594
Trade publications, 21, 95, 182, 242, 292, 373, 487, 551, 702, 749, 816, 907, 959, 1109, 1191, 1260, 1485, 1560, 1634, 1714, 1788
Trade winning methods, 54, 193, 381, 454, 571, 648, 709, 837, 918c, 981, 1122, 1200, 1268, 1568, 1641, 1723, 1801
Trading stamps and other baits, 1802
Trademark law, 74, 497, 548, 1301, 1445
Trade schools, Opposition to, 1239
Tunnels:
Chicago, and settling buildings, 615
Hudson River, 1516
Simplon, 1370
Turbine pumps, Modern. By O. H. Mueller, *724
Turner carburettor, *948
Turntable, Automobile, *283
Turret machine, Prentice multiple spindle automatic, *1454
Tuyere jacket mantle, *1615
Tyler nut tapper, *1764

U.

Underwood, J. H., Portrait, *1272
Underwood portable boring bar, *1763
United Engineering & Foundry Co., 608, 670, 795
U. S. Cast Iron Pipe & Foundry Co., Statement, 3
United States Steel Corporation:
Expansion, 355
Extraordinary record breaking, 1311
Profit sharing plan, 1685
Statements, 245, 1171
Tonnage, 1754
Unloaders. (See Ore unloaders.)
Unwatering the Hamilton iron mine. By J. T. Jones, 1222

V.

Valve gears, Steam moved. By E. P. Watson, 484
Valve invention and misapplied genius, 165
Valves:
Fischer gas reversing valve, *1684
Foster reducing valves, 1225
Gutermuth patent valve, *6
Lunkenheimer regrinding valve, *536
Powell White Star, *949
Vandegrift Mfg. Co., 1428
Verses; On the Warpath, 651
Victoria Works of Williams & Robinson, *1223

W.

Wages, Molders', in the Pittsburgh district, 244
Waring pressure regulators, *1006
Warrant market:
Disturbing speculation in pig iron warrants, 1460
New York, 47, 103, 182, 244, 312, 371, 432, 499, 564, 629, 685, 763, 816, 905, 967, 1038, 1108, 1185, 1254, 1405, 1478, 1555, 1629, 1707, 1783
Warren, R. D., Portrait, *53
Warren desk outfits, *991
Warships of the future, 1538
Warwick Iron Ore Co., 1091
Warwick wire annealing furnace, *1082
Washing machine, Imperial rotary, *61
Washington, Business conditions in, 915
Washington Hardware Association, 1792
Washington letter, 646
Waste products, Utilization of, 951
Water filters, Asbestos-carbon, *1727
Water hoist, Hampton, *1437
Water lifter, Gould's new duplex, *220
Water power problem, A, 1305
Water powers of the Southeastern Appalachian region, 484
Water storage and the public good, 1612
Water wheels:
Dynamometer tests of, *1452
Pitman Pelton, *732
Watres automobile brake, *1084
Watson, E. P. Steam moved valve gears, 484
Waverly, Iowa, Merchants' Protective Association, 713
Weaver, H. B. The failure of blast furnace in walls, 416
Webber, W. W. Catalogue house competition, 59
Weber, H. C. History of the Michigan Retail Hardware Dealers' Association, 447
Wedge, Neverslip anchor, *1063
Welding iron and steel, New processes for. By F. Jottrand, 1561
Welding plate tests, Laffitte, 505
Wellman-Seaver-Morgan air compressor, *147
Western Malleable Steel Co., 1524
Westinghouse Electric & Mfg. Co., Convention of managers, 1372
Westinghouse Machine Co., 1773
Wheel forging. By J. H. Baker, *596
Whitcomb-Blaisdell Machine Tool Co., 1459
White Lily Washer Co., 1639
Whitney, J. H., Portrait of, *442
Wholesale and Retail Hardware Joint Committee, 836
Wickes, G. T. Coke drawing machine for beehive ovens, *338
William Cramp & Sons Ship & Engine Building Co., Statement, 9
Williams, A. D., Jr. Open hearth furnace comparisons, 740, 1532
Wilson, J. P. Youngstown as a railroad center, 1170
Window and floor cleaner, Modern, *62
Window display:
Automobile, *381, *1802
Battle ships, *381, *1200
Corn carnival, *1568
Enameled ware, *54
Fire engine, *981
Hardware in battle array, *837
Locomotive, *1123
Model kitchen float, *649
Paint window, *918c
Paints and brushes, *193
Queries regarding, 382
Railroad exhibit, 1801, *1802
Spring goods, *193
Suggestions, 1200
Trolley car, *454
Winter scene, 1723
Wire, Invisible platinum. By S. D. V. Burr, 1019
Wood Shovel & Tool Co.'s plant at Piqua, Ohio, *128
Woodbridge, D. E. Lake Superior iron ore trade in 1905, 1756
Woody, J. B. Our friend, the retail hardwareman, 190
Workmen's homes, Problem of, 288
Worthington, Henry R., hydraulic works, *927
Woven wire fence, Distribution of, 1572
Wrenches:
Ellis Adjustable S, *1429
Ideal screw, *389
Vandegrift, *1428
Wright, W. S., Portrait, *1337
Wyckoff, Seamans & Benedict, Encouragement of employees, 509
Wyman, H. W., Sketch of, *1025

Y.

Yale & Towne Mfg. Co.'s prizes for suggestions, 451
Youngstown as a railroad center. By J. P. Wilson, 1170
Youngstown Sheet & Tube Co., 281

Z.

Zenith Furnace Co., 1301